United States
Environmental Protection
Agency

Environmental
Sciences Division
P.O. Box 93478
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September 1998

Research and Development

EPA

AERIAL PHOTOGRAPHIC ANALYSIS WASTE DISPOSAL, INC., SITE Santa Fe Springs, California

Report 2 - Hazardous Waste Site Characterization, Oil Reservoir, and Associated Land Parcels

EPA Region 9

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AERIAL PHOTOGRAPHIC ANALYSIS
WASTE DISPOSAL, INC., SITE

Santa Fe Springs, California

Report 2 - Hazardous Waste Site Characterization,
Oil Reservoir, and Associated Land Parcels

by

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ENVIRONMENTAL SCIENCES DIVISION
NATIONAL EXPOSURE RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
LAS VEGAS, NEVADA 89193-3478

NOTICE

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ABSTRACT

This report (the second of two) presents the results of an aerial photographic analysis conducted with historical aerial photographs of the Waste Disposal, Inc., site located in Santa Fe Springs, California. A total of 36 sets (dates) of vertical and oblique black-and-white historical photographs (listed in the References section) spanning the years 1922-1968 are used to produce this report. The purpose of this report is to provide remote sensing support to field investigations in Region 9 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The first report in this series presents an analysis of the entire Waste Disposal, Inc., site.

In this second report eight aerial photographs are used to depict the analysis results. Photographs of the oil reservoir were examined to determine if the reservoir was "clean", i.e., no hazardous waste-related features were visible at any time during the study period, particularly in 1951. In addition, environmentally significant hazardous waste-related features such as stains, standing liquid, fill, and light- and dark-toned material are identified and documented in land parcels within the Waste Disposal, Inc., site.

Analysis of the oil reservoir revealed that no hazardous waste-related features were seen within the reservoir in 1928 and 1937. The reservoir exhibited visible hazardous waste-related features such as standing liquid and dark-toned material on all other sets (dates) of photographs within the time period from 1945 to 1959. This includes five dates in 1951 (February 1, February 25, May 22, July 27, and October 6). Hazardous waste-related features were observed within or adjacent to 11 of the 21 land parcels present at the Waste Disposal, Inc., site.

The U.S. Environmental Protection Agency (EPA), Environmental Sciences Division, Landscape Ecology Branch in Las Vegas, Nevada, prepared this report for the EPA Region 9 Hazardous Waste Management Division in San Francisco, California, and the EPA Office of Emergency and Remedial Response in Washington, D.C.

CONTENTS

FIGURES

INTRODUCTION

This report (the second of two) presents the results of an aerial photographic analysis conducted with historical aerial photographs of the Waste Disposal, Inc. site (CERCLIS ID# CAD980884357). A total of 36 dates of black-and-white historical photographs (listed in the References section) spanning the years 1922-1968 were used to produce this report. Of these 36 sets, eight sets of aerial photographs, from 1927 through 1968, were used to depict the results of the analysis. The Waste Disposal, Inc., site is approximately 17.4 hectares (43.0 acres) in extent and is located in the town of Santa Fe Springs, California (Figures 1 and 2). Drainage at the site flows from northwest to southeast. The first report in this series presents an analysis of the entire Waste Disposal, Inc., site.

In this second report, analysis was conducted of the oil reservoir to determine if at any time during the study period (particularly in 1951) the reservoir was "clean", i.e., there were no visible hazardous waste-related features. This condition would possibly indicate that at some time in the past remediation of the reservoir had been conducted. Additionally, environmentally significant hazardous waste-related features such as stains, standing liquid, and dark-toned material, are identified and documented in land parcels within the Waste Disposal, Inc., site. The purpose of this analysis is to provide remote sensing support for field investigations in Region 9 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The oil reservoir is situated in the central portion of the site. No hazardous waste-related features were observed within the reservoir in 1928 and 1937. It could not be determined why there were no such features in 1928; however, the reservoir was covered in 1937. The reservoir exhibited visible hazardous waste-related features (standing liquid, stains, or dark-toned material) on all other sets (dates) of photographs in the time period of 1945 through 1959. This period includes five dates in 1951 (February 1, February 25, May 22, July 27, and October 6; Figures 3-9).

A series of seven photographs depicts land parcels where hazardous waste-related features are observed. Only photographs that show hazardous waste-related features and have sufficient resolution are included in this section of the report (1951, 1955, 1959, 1962, 1963, and 1968).

To aid in comprehensive understanding of the analysis of the site, features referenced in the background material are sometimes cited in the text that accompanies each photograph. When they first appear in the text these features are denoted with an asterisk (*). They are also denoted with an asterisk each time they appear on the photographs.

A glossary, defining features or conditions identified in this report, follows the analysis section. Sources for all maps, aerial photographs, and collateral data used in the production of this report are listed in the References section. A list of all aerial photographs that were identified and evaluated for potential application to this study can be obtained by contacting the EPA Work Assignment Manager. Selected historical aerial photographs used in the analysis of this site have been digitally scanned and plotted for use in this report. Transparent overlays with interpretative data are affixed to each of the digital plots. See the Methodology section for a discussion of the scanning and plotting procedures.

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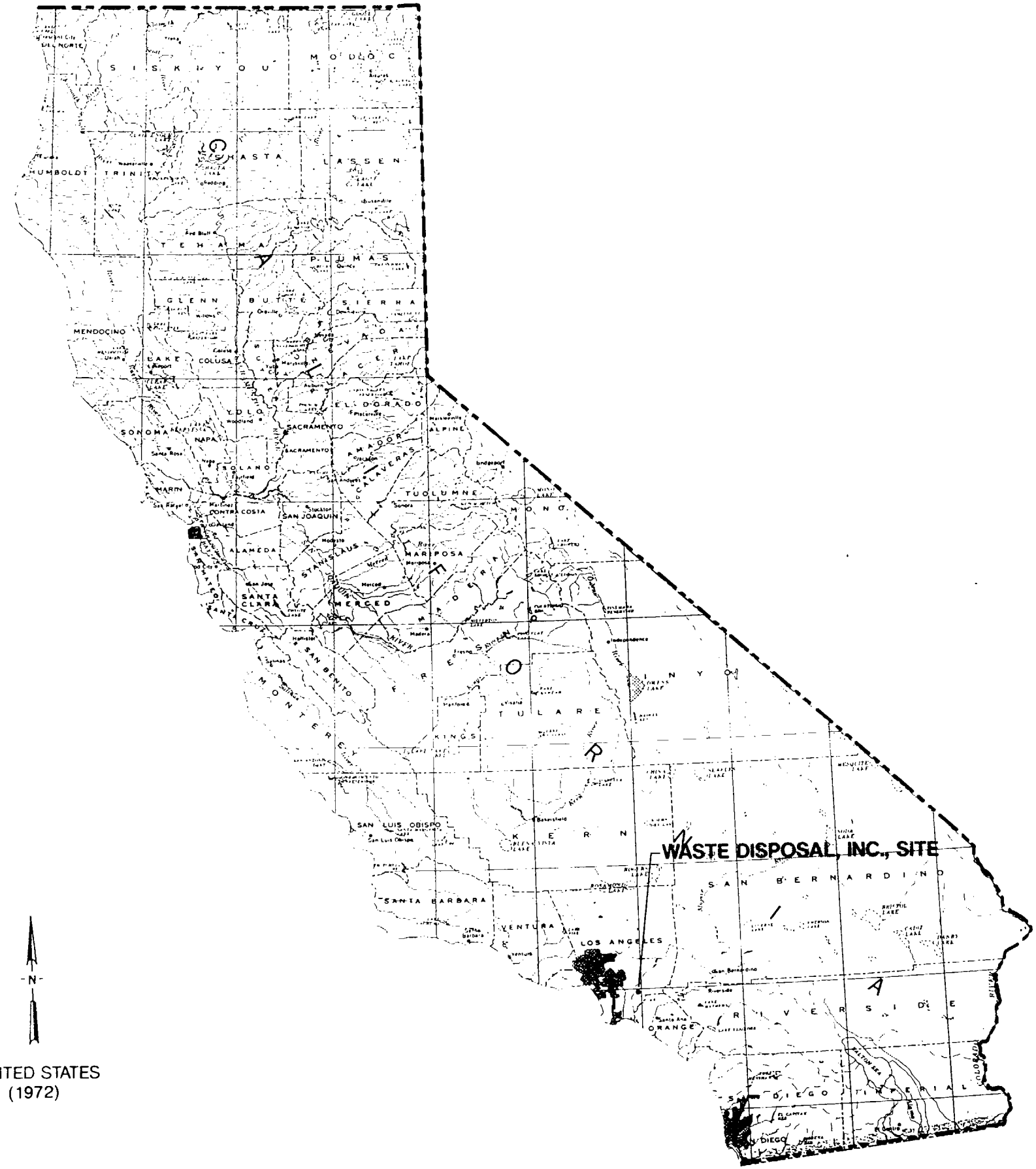


Figure 1. Study area location map, California (USGS 1972). Approximate scale 1:4,500,000.

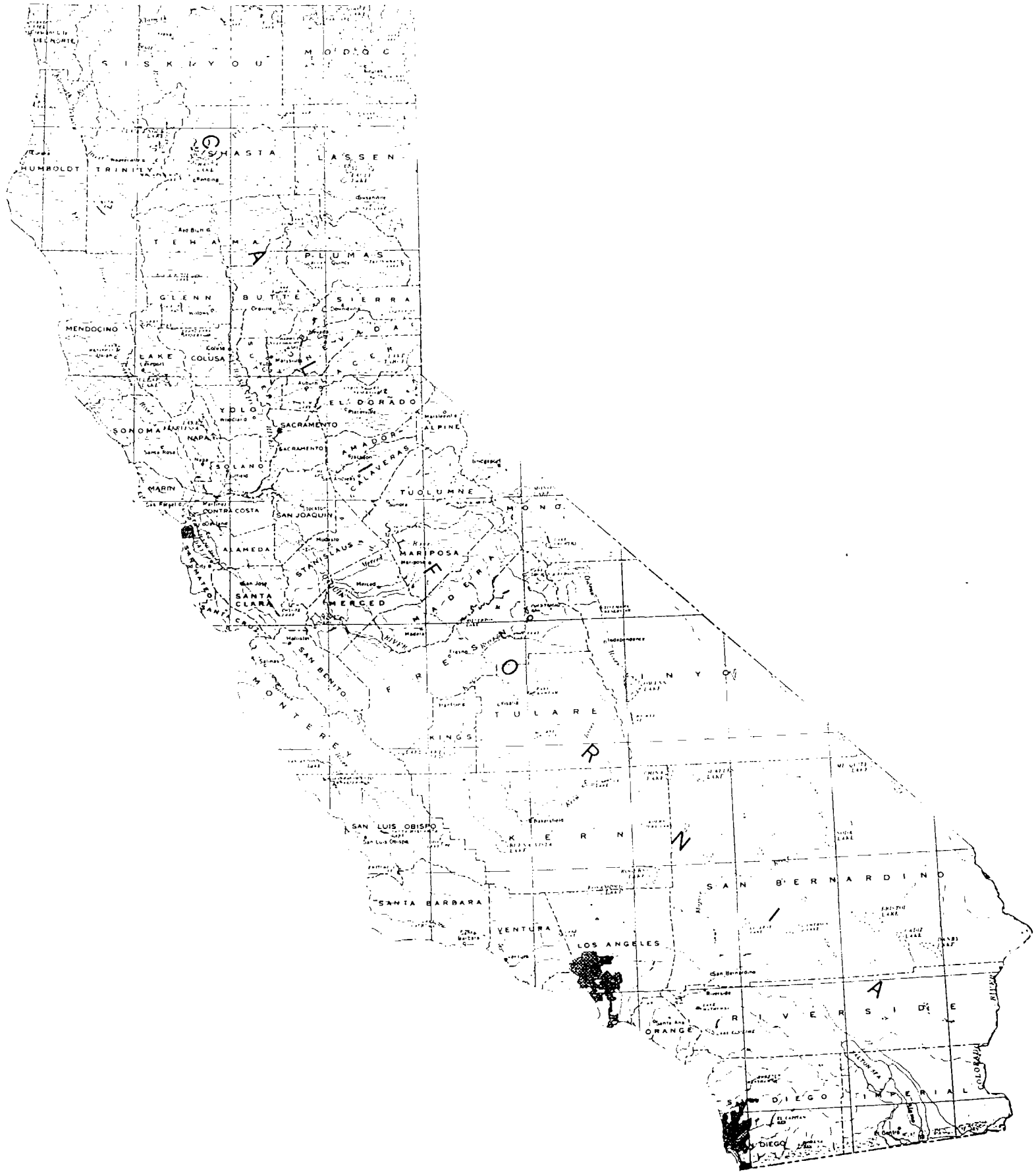


Figure 1. Study area location map, California (USGS 1972). Approximate scale 1:4,500,000.

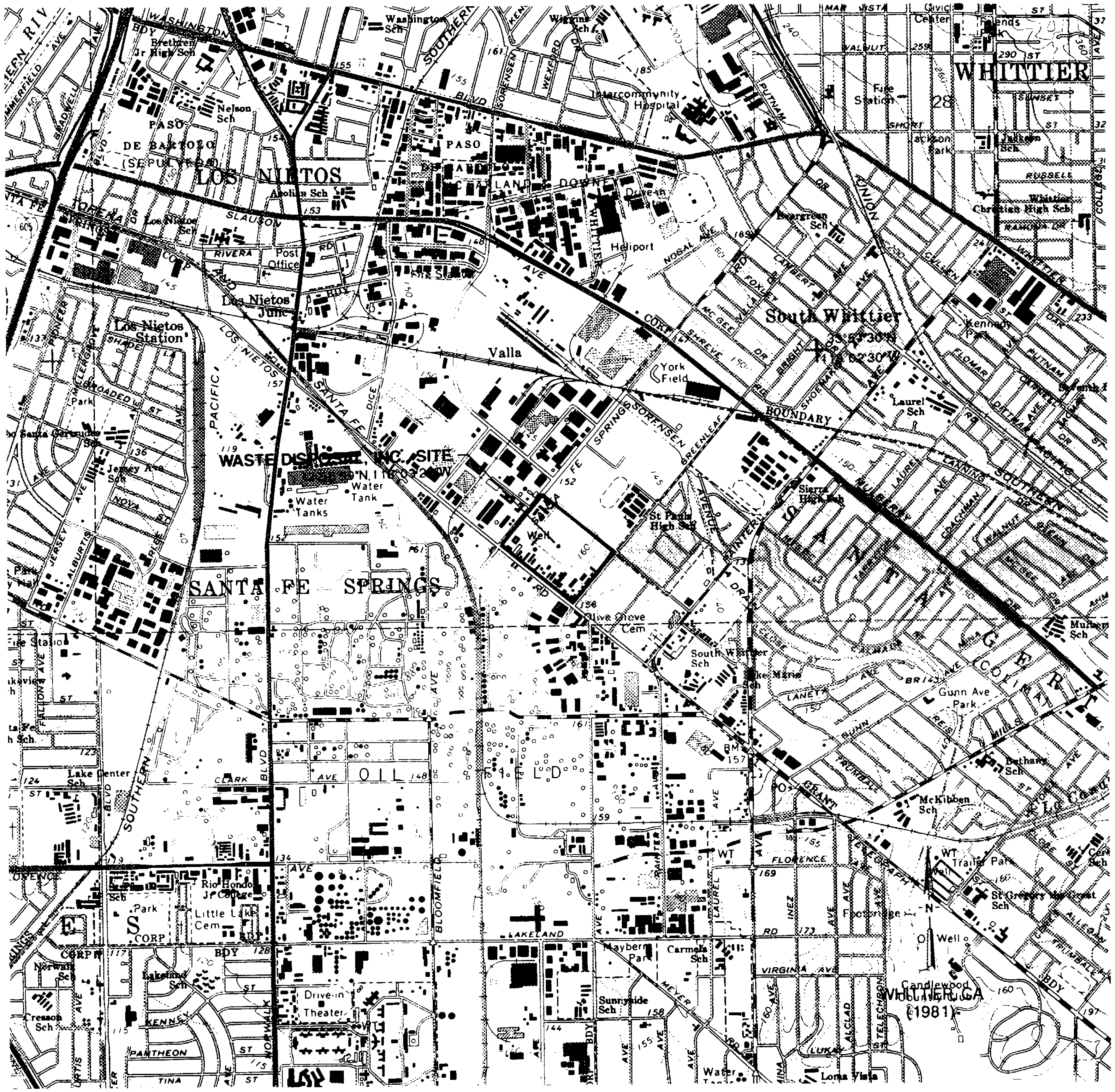


Figure 2. Local study area location map, Whittier, California (USGS 1981).
Scale 1:24,000.

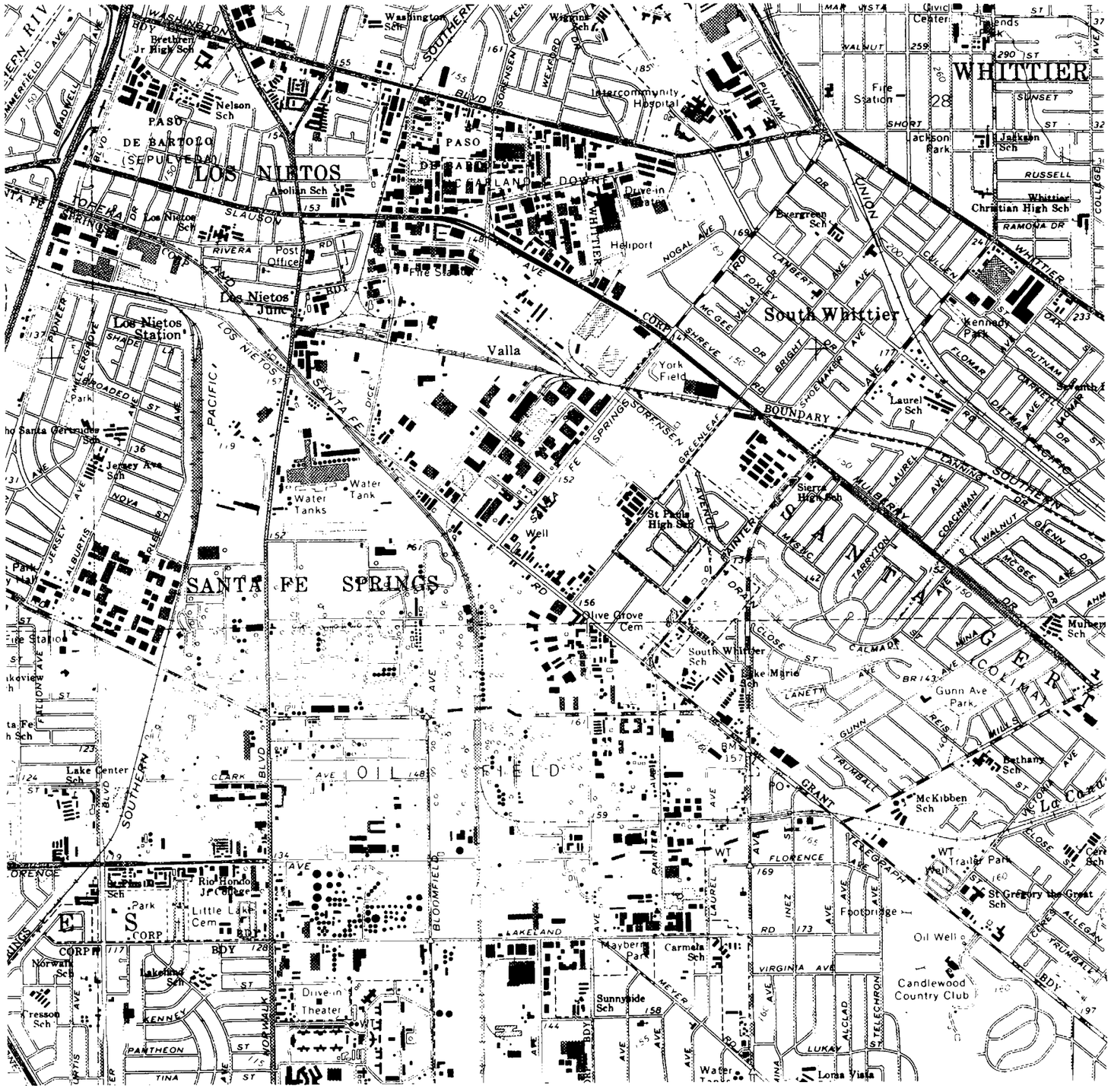


Figure 2. Local study area location map, Whittier, California (USGS 1981). Scale 1:24,000.

METHODOLOGY

This report was prepared using a standard methodology that includes the following steps:

- data identification and acquisition,
- photographic analysis and interpretation, and
- graphics and text preparation.

These steps are described below. Subsections also address details related to specific kinds of analyses that may be required to identify environmental features such as surface drainage and wetlands. All operational steps and processes used to perform this work (including data identification and acquisition, photographic analysis and interpretation, and graphics and text preparation) adhere to strict QA/QC guidelines and standard operating procedures (SOPs). These guidelines and procedures are documented in the Master Quality Assurance Project Plan (QAPP) prepared for Remote Sensing Technical Support Contract No. 68-C5-0065 (LESAT 1998).

Data identification and acquisition included a search of government and commercial sources of historical aerial film for the study area. Photographs with optimal spatial and temporal resolution and image quality were identified for acquisition. In addition, U.S. Geological Survey (USGS) topographic maps were obtained to show the study area location and to provide geographic and topographic context.

To conduct this analysis, the analyst examined diapositives (transparencies) of historical aerial photographs showing the study area. Diapositives are most often used for analysis instead of prints because the diapositives have superior photographic resolution. They show minute details of significant environmental features that may not be discernible on a paper print.

A photographic analyst uses a stereoscope to view adjacent, overlapping pairs of diapositives on a backlit light table. In most cases, the stereoscope is capable of various magnifications up to 60 power. Stereoscopic viewing

involves using the principle of parallax (observing a feature from slightly different positions) to observe a three-dimensional representation of the area of interest. The stereoscope enhances the photo interpretation process by allowing the analyst to observe vertical as well as horizontal spatial relationships of natural and cultural features.

The process of photographic analysis involves the visual examination and comparison of many components of the photographic image. These components include shadow, tone, color, texture, shape, size, pattern, and landscape context of individual elements of a photograph. The photo analyst identifies objects, features, and "signatures" associated with specific environmental conditions or events. The term "signature" refers to a combination of components or characteristics that indicate a specific object, condition, or pattern of environmental significance. The academic and professional training, photo interpretation experience gained through repetitive observations of similar features or activities, and deductive logic of the analyst as well as background information from collateral sources (e.g., site maps, geologic reports, soil surveys) are critical factors employed in the photographic analysis.

The analyst records the results of the analysis by using a standard set of annotations and terminology to identify objects and features observed on the diapositives. Significant findings are annotated on overlays attached to the photographic or computer reproduced prints in the report and discussed in the accompanying text. Annotations that are self-explanatory may not be discussed in the text. The annotations are defined in the legend that accompanies each print and in the text when first used.

Objects and features are identified in the graphics and text according to the analyst's degree of confidence in the evidence. A distinction is made between certain, probable, and possible identifications. When the analyst believes the identification is unmistakable (certain), no qualifier is used. Probable is used when a limited number of discernible characteristics allow the analyst to be reasonably sure of a particular identification. Possible is used when only a few characteristics are discernible, and the analyst can only infer an identification.

The prints in this report have been reproduced, either by photographic or computer methods, from the original film. Reproductions are made from the original film and may be either contact (the same size) prints or enlargements, depending on the scale of the original film. Any computer-produced prints used in this report are generated from scans of the film at approximately 1,300 dots per inch (dpi) and printed at 720 dpi. Although the reproductions allow effective display of the interpretive annotations, they may have less photographic resolution than the original film. Therefore, some of the objects and features identified in the original image and described in the text may not be as clearly discernible on the prints in this report.

Aerial photographs can be taken from different perspectives. The photographs in this report were taken from both vertical and oblique perspectives (see glossary definitions). The vertical photographs were taken at a 90 degree angle (looking straight down) and the oblique photographs were taken at an angle of 30 to 60 degrees.

Study area boundaries shown in this report were determined from aerial photographs or collateral data and do not denote legal property lines or ownership.

Surface Drainage

The surface drainage analysis produced for this report identifies the direction and potential path that a liquid spill or surface runoff would follow based on the topography of the terrain and the presence of discernible obstacles to surface flow. The analyst determines the direction of surface drainage by stereoscopic analysis of the aerial photographs and by examining USGS topographic maps. Site-specific surface drainage patterns are annotated n the map or photo overlay. Where the direction of subtle drainage cannot be determined, an indeterminate drainage line symbol is used. Regional surface flow is ascertained from the USGS topographic maps.

PHOTO ANALYSIS

OIL RESERVOIR

1928 (FIGURE 3)

No hazardous waste-related features are seen within the reservoir on this photograph.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

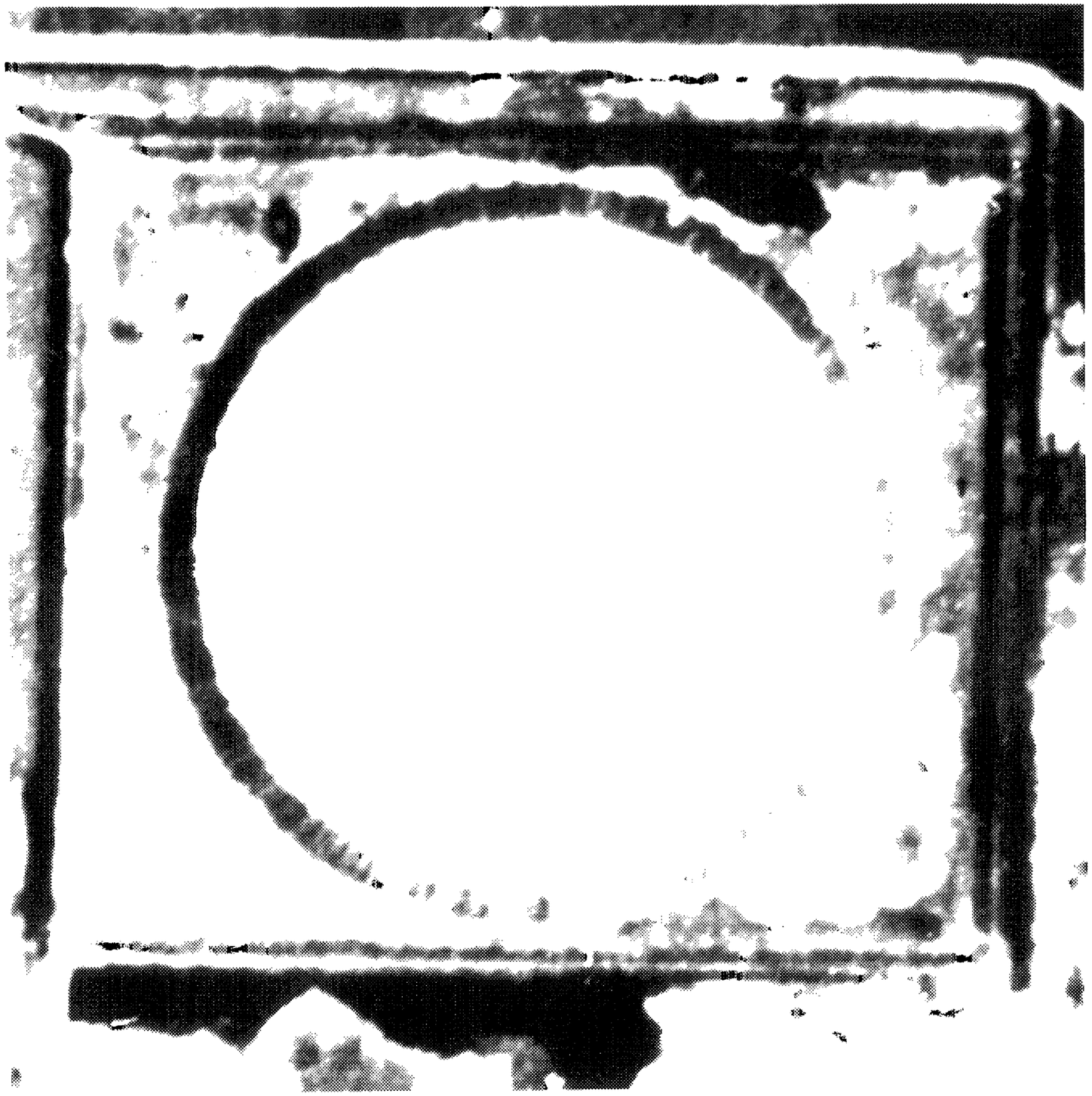
TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 3. Waste Disposal, Inc., Oil Reservoir, 1928. Approximate scale 1:1,265.



INTERPRETATION CODE

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- FENCED SITE BOUNDARY
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Figure 3. Waste Disposal, Inc., Oil Reservoir, 1928. Approximate scale 1:1,265.

FEBRUARY 20, 1937 (FIGURE 4)

No hazardous waste-related features could be observed within the oil reservoir because a cover has been constructed atop the reservoir.

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Figure 4. Waste Disposal, Inc., Oil Reservoir, February 20, 1937. Approximate scale 1:1,240.

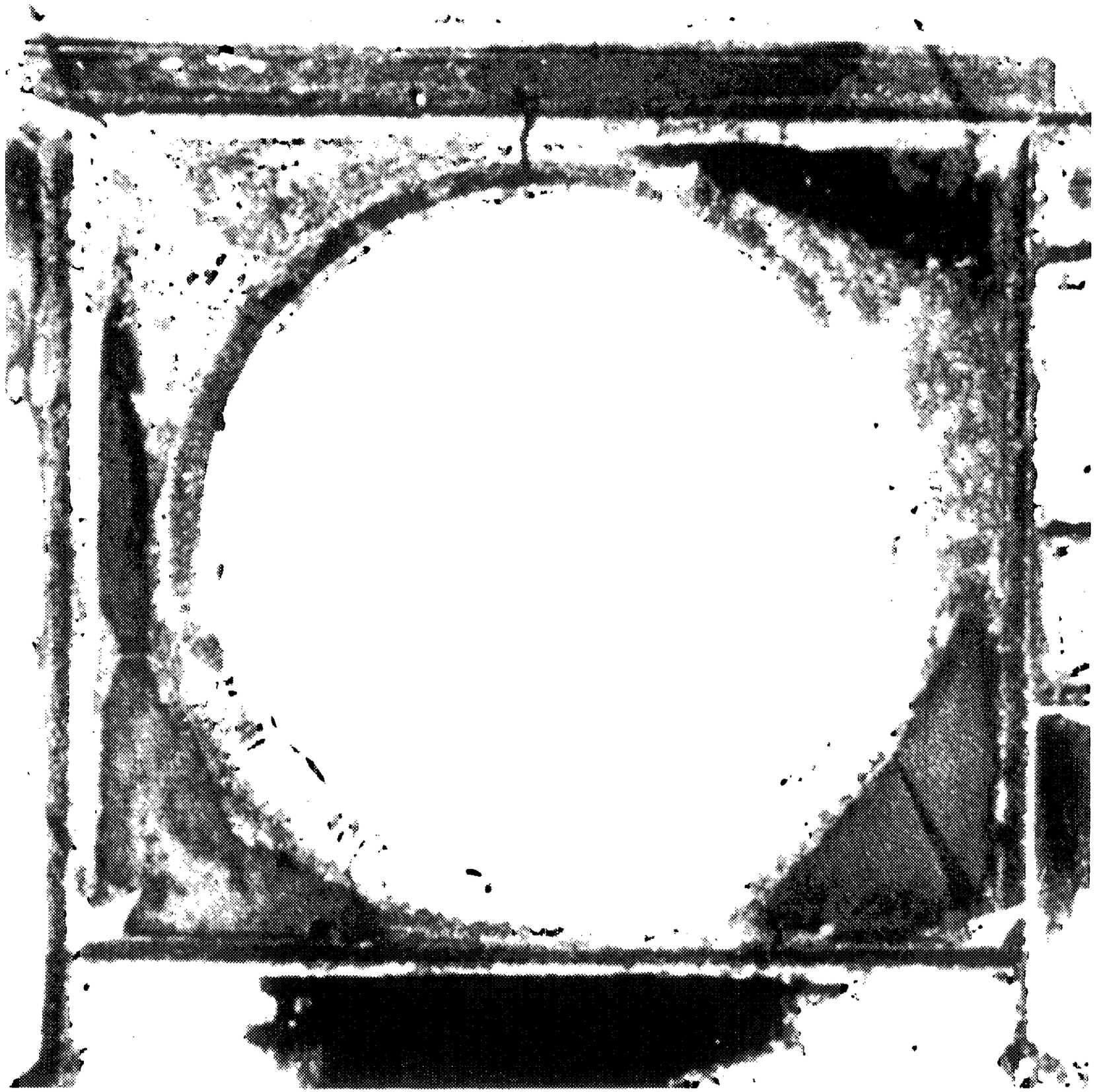

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Figure 4. Waste Disposal, Inc., Oil Reservoir, February 20, 1937. Approximate scale 1:1,240.

FEBRUARY 1, 1951 (FIGURE 5)

The oil reservoir contains standing liquid.

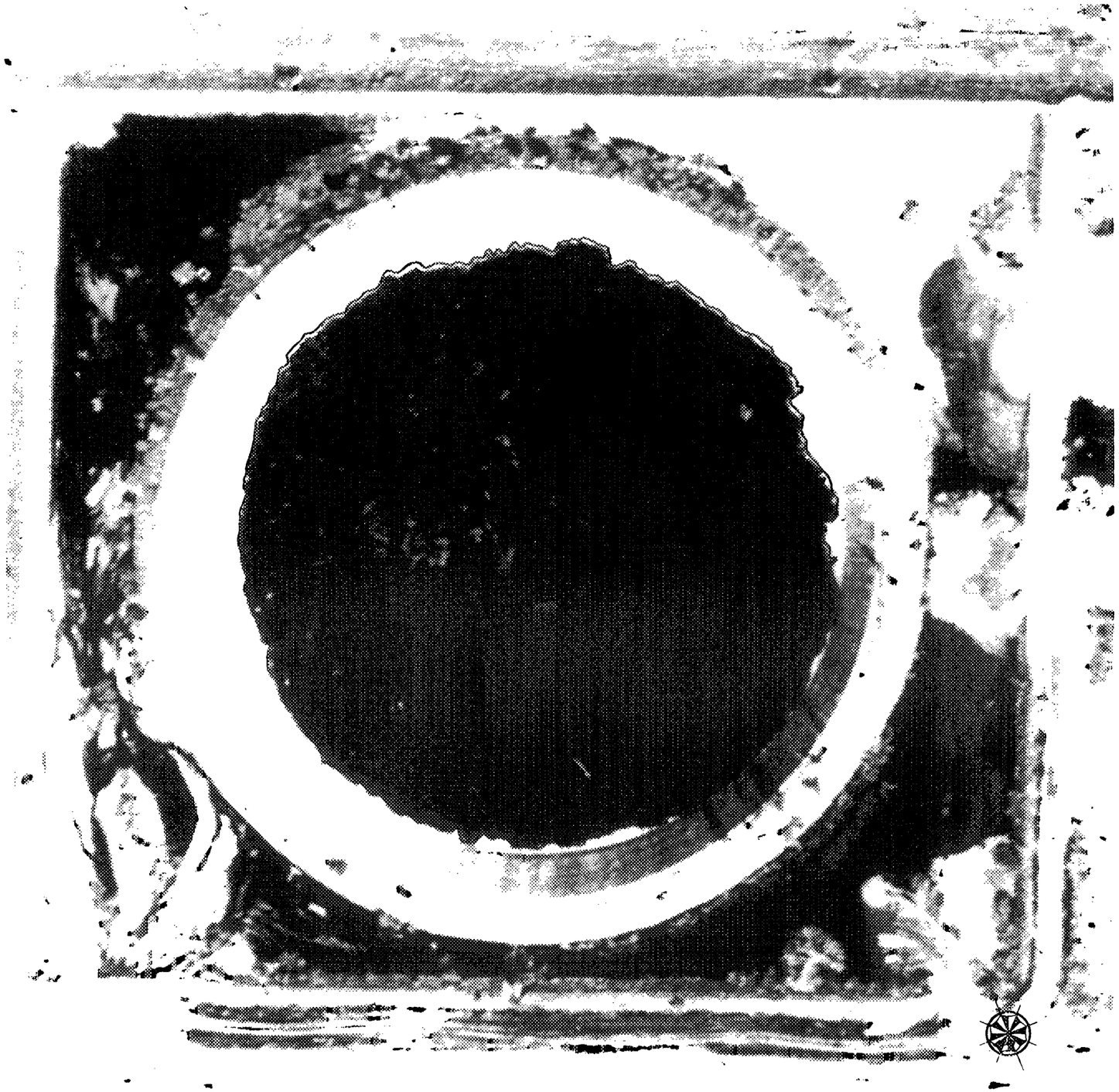

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Figure 5. Waste Disposal, Inc., Oil Reservoir, February 1, 1951. Approximate scale 1:1,215.

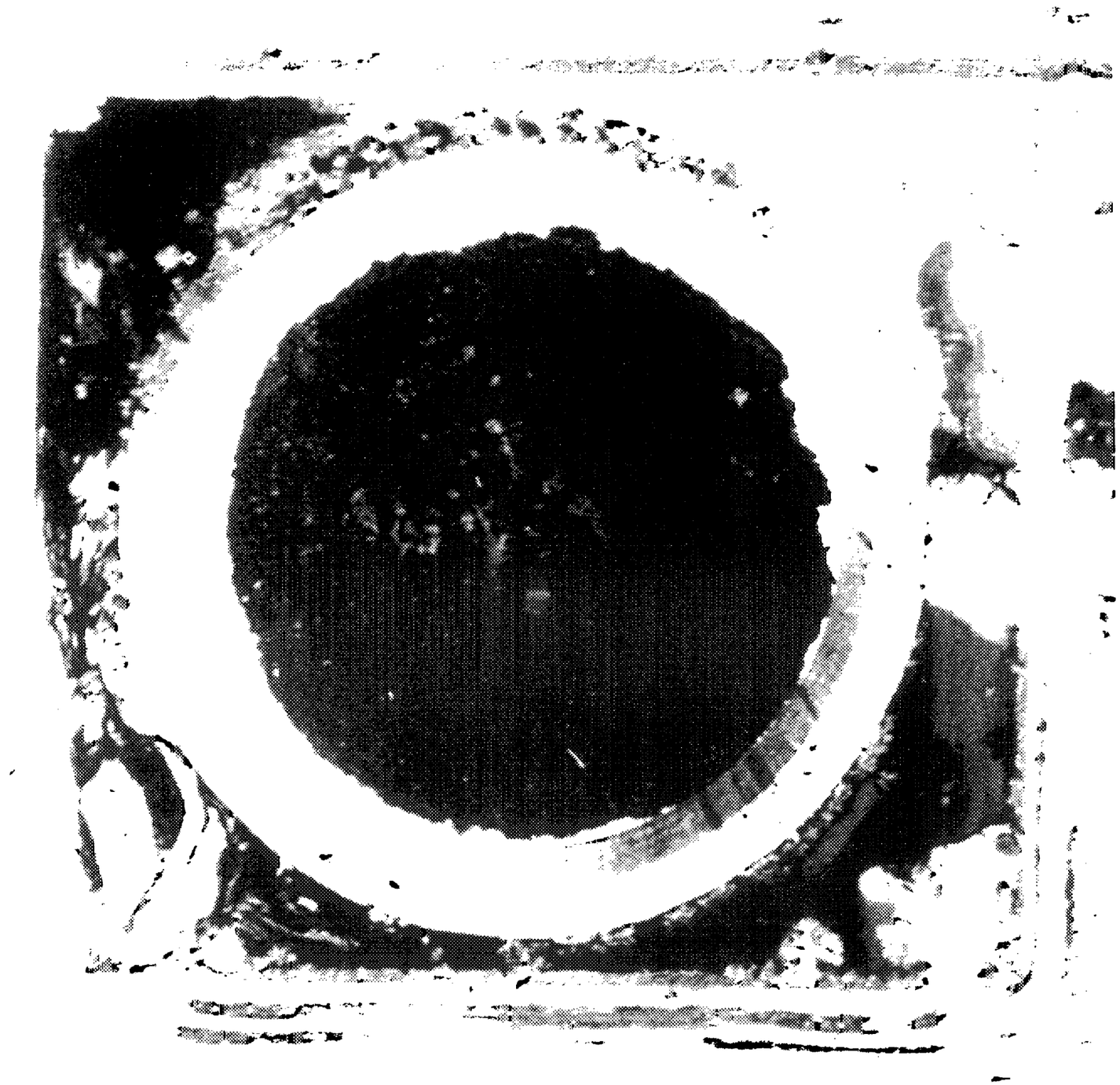

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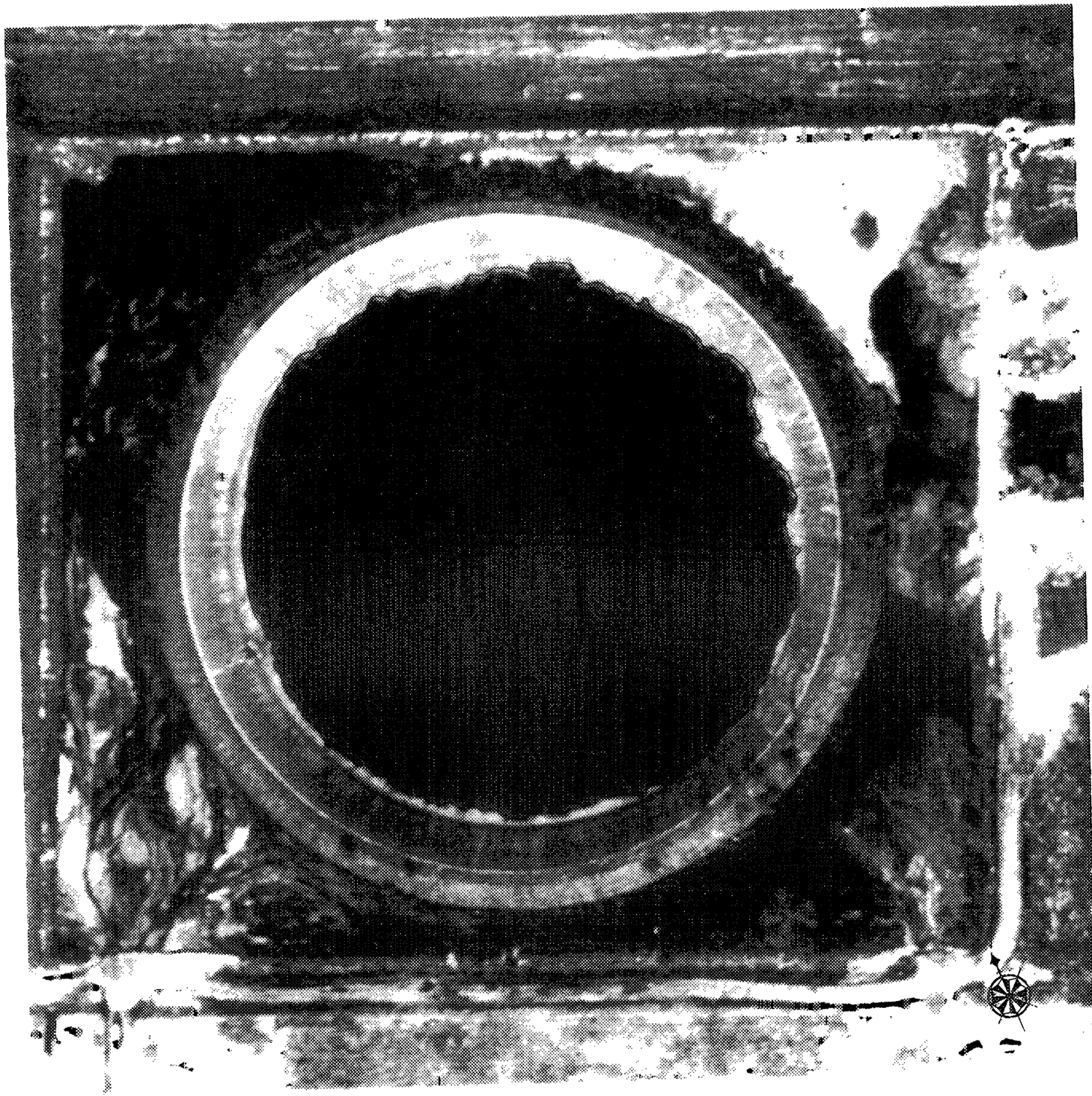
Figure 5. Waste Disposal, Inc., Oil Reservoir, February 1, 1951. Approximate scale 1:1,215.

FEBRUARY 25, 1951 (FIGURE 6)

On this date, the oil reservoir contains standing liquid and dark-toned material.



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SITE FEATURES

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Figure 6. Waste Disposal, Inc., Oil Reservoir, February 25, 1951. Approximate scale 1:1,250.

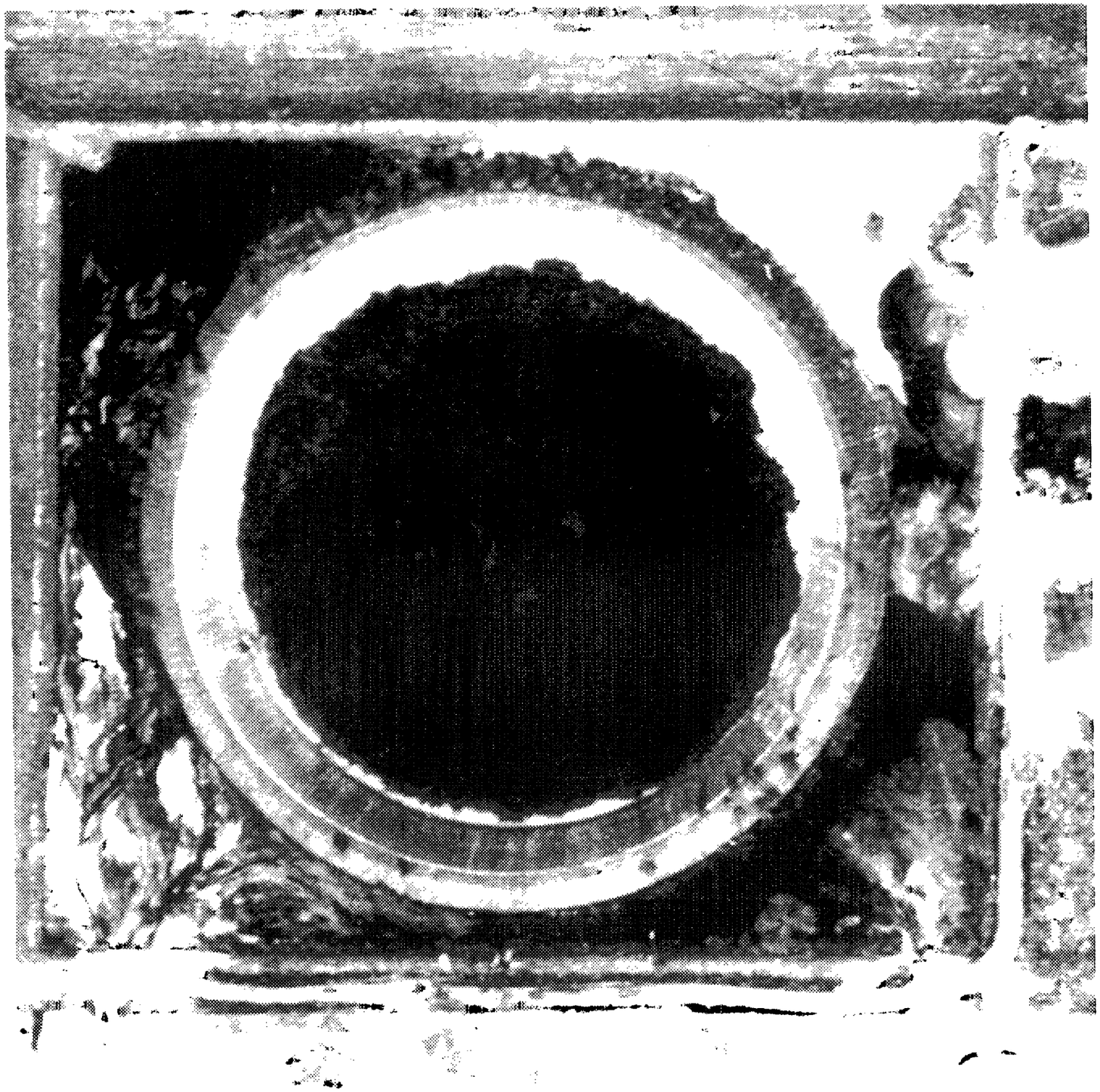

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Figure 6. Waste Disposal, Inc., Oil Reservoir, February 25, 1951. Approximate scale 1:1,250.

APRIL 22, 1951 (FIGURE 7)

The oil reservoir contains standing liquid and dark-toned material.

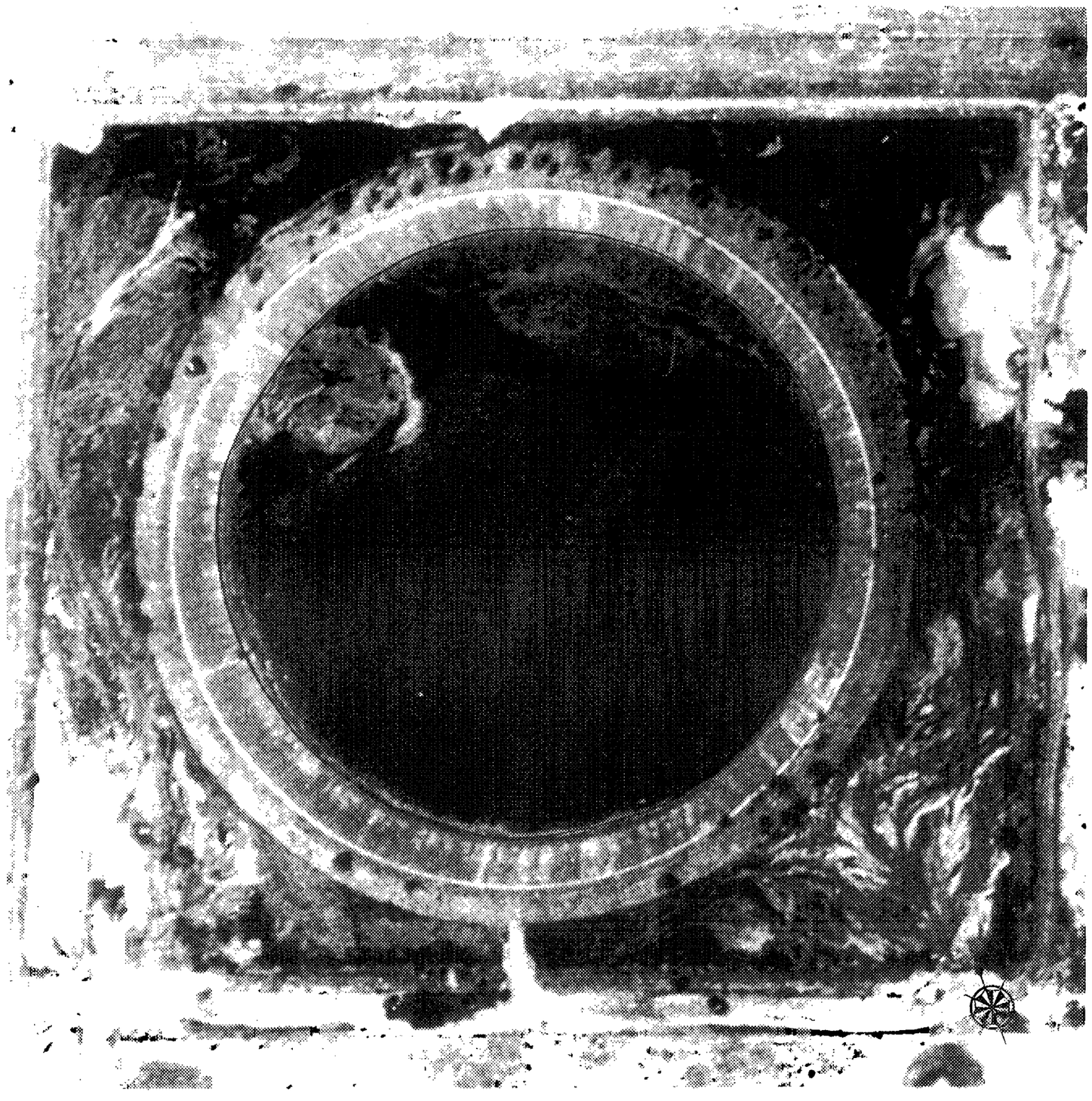

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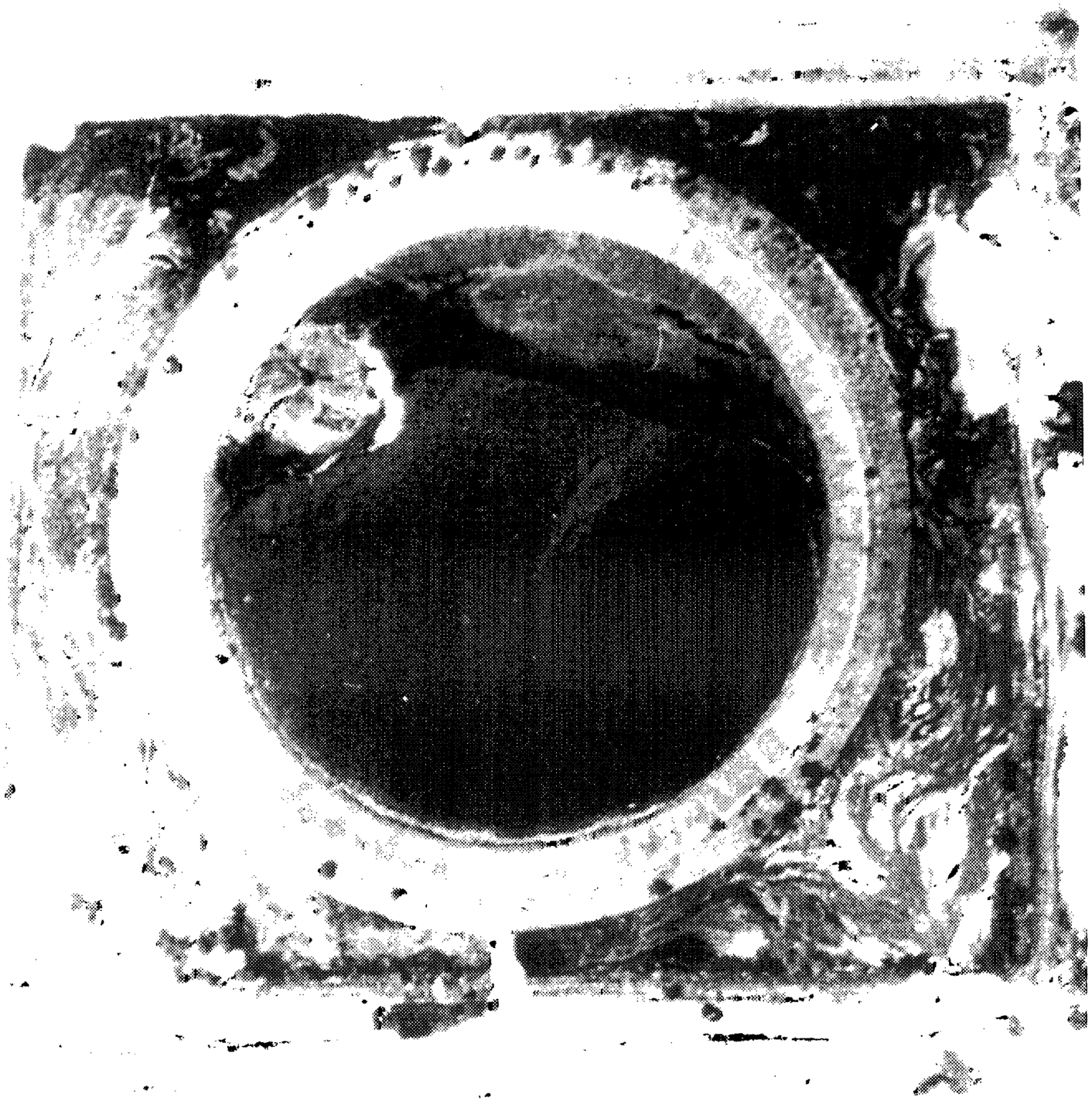
Figure 7. Waste Disposal, Inc., Oil Reservoir, April 22, 1951. Approximate scale 1:1,200.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

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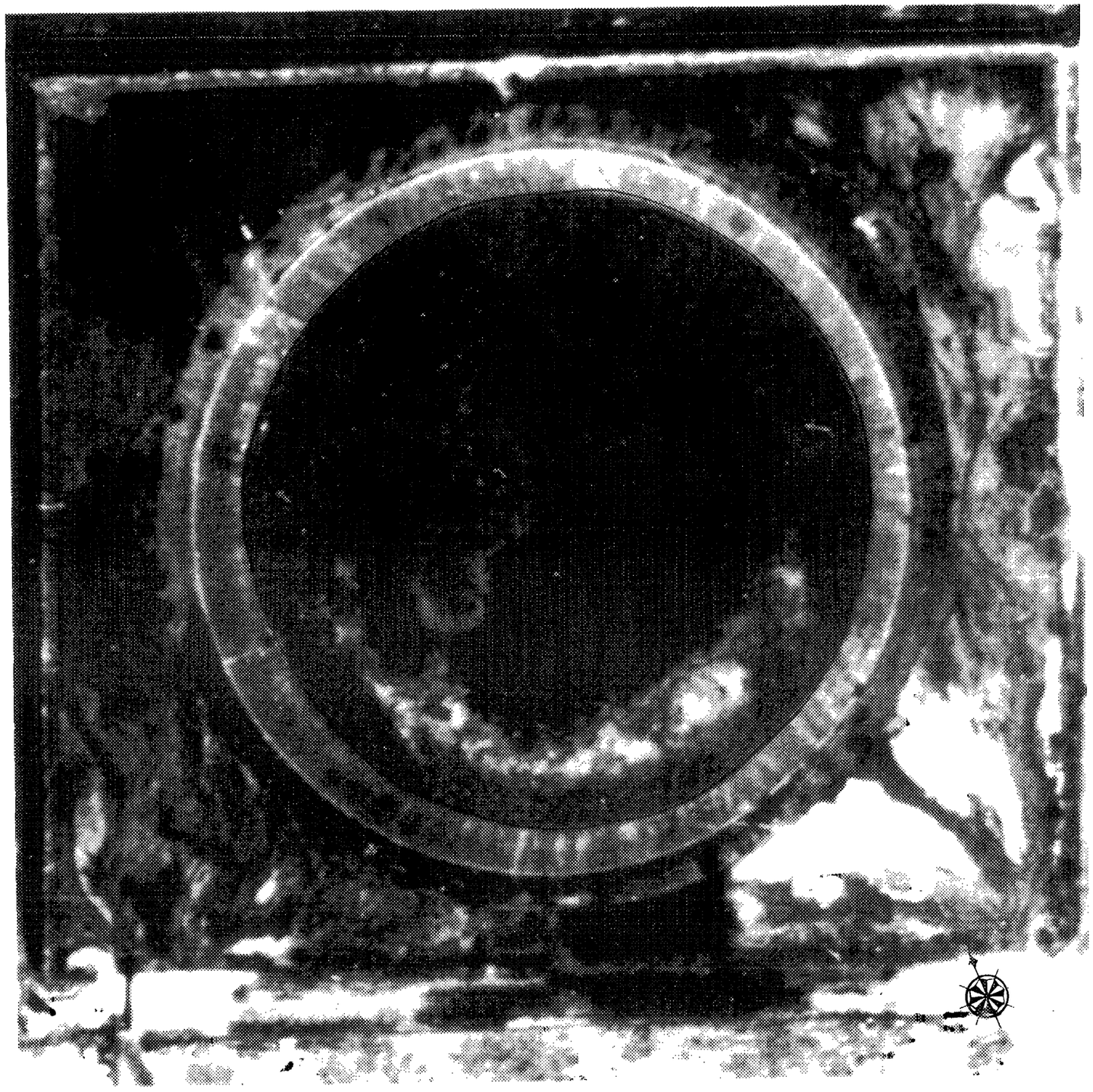
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 7. Waste Disposal, Inc., Oil Reservoir, April 22, 1951. Approximate scale 1:1,200.

JULY 27, 1951 (FIGURE 8)

On this date the oil reservoir contains standing liquid and dark-toned material.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

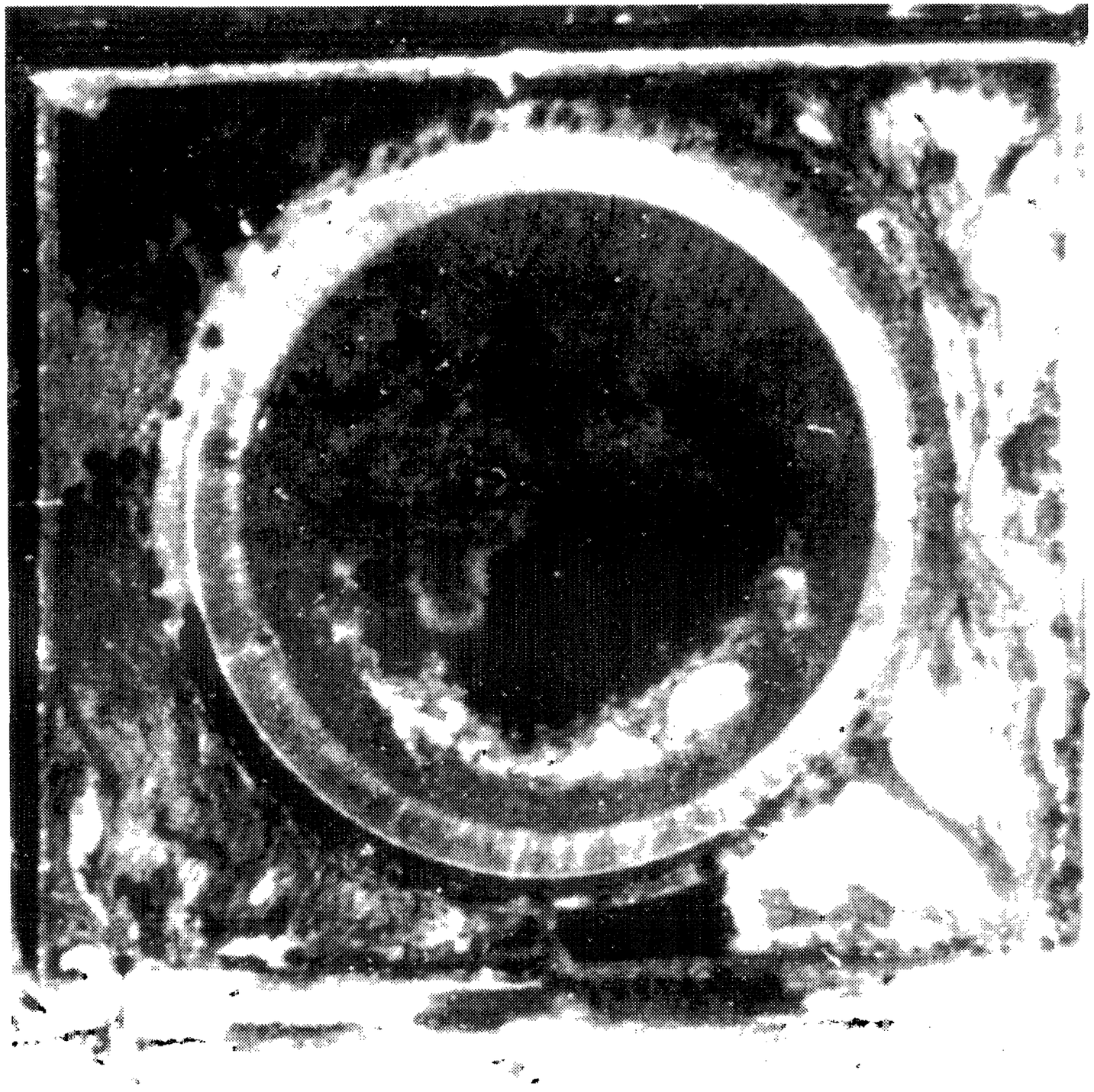
TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 8. Waste Disposal, Inc., Oil Reservoir, July 27, 1951. Approximate scale 1:1,165.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 8. Waste Disposal, Inc., Oil Reservoir, July 27, 1951. Approximate scale 1:1,165.

OCTOBER 6, 1951 (FIGURE 9)

This oblique aerial photograph shows that the oil reservoir contains standing liquid (SL), stains (ST), and dark-toned material.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 9. Waste Disposal, Inc., Oil Reservoir, October 6, 1951. Oblique view looking southwest. Scale varies.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

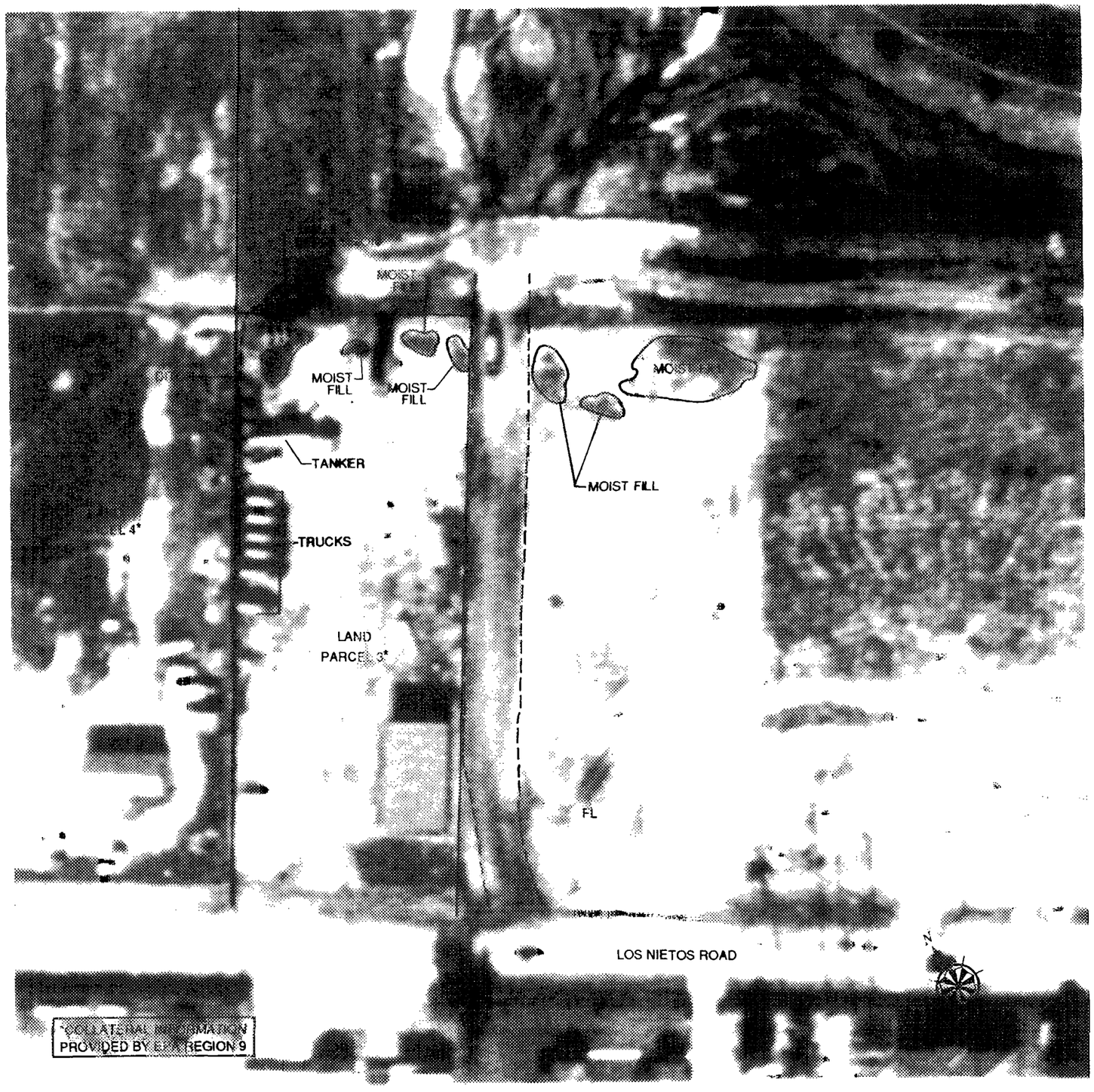
- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 9. Waste Disposal, Inc., Oil Reservoir, October 6, 1951. Oblique view looking southwest. Scale varies.

ASSOCIATED LAND PARCELS

FEBRUARY 25, 1951 (FIGURE 10)

Five short, parallel drainage channels originate in Land Parcel 3* and flow into an adjacent drainage ditch which trends to the northeast. Dark stains are seen within these channels. A tanker is parked next to one of these drainage channels. Three additional channels originate from a large stain at the northern corner of the parcel. Liquid wastes have apparently been released at these locations and have stained the drainage channels. A small depression exists near the corner of this parcel where liquid wastes have probably collected. Moist fill is visible on the parcel itself and to the southeast across an access road.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 10. Waste Disposal, Inc., Land Parcels 3 and 4, February 25, 1951. Approximate scale 1:800.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

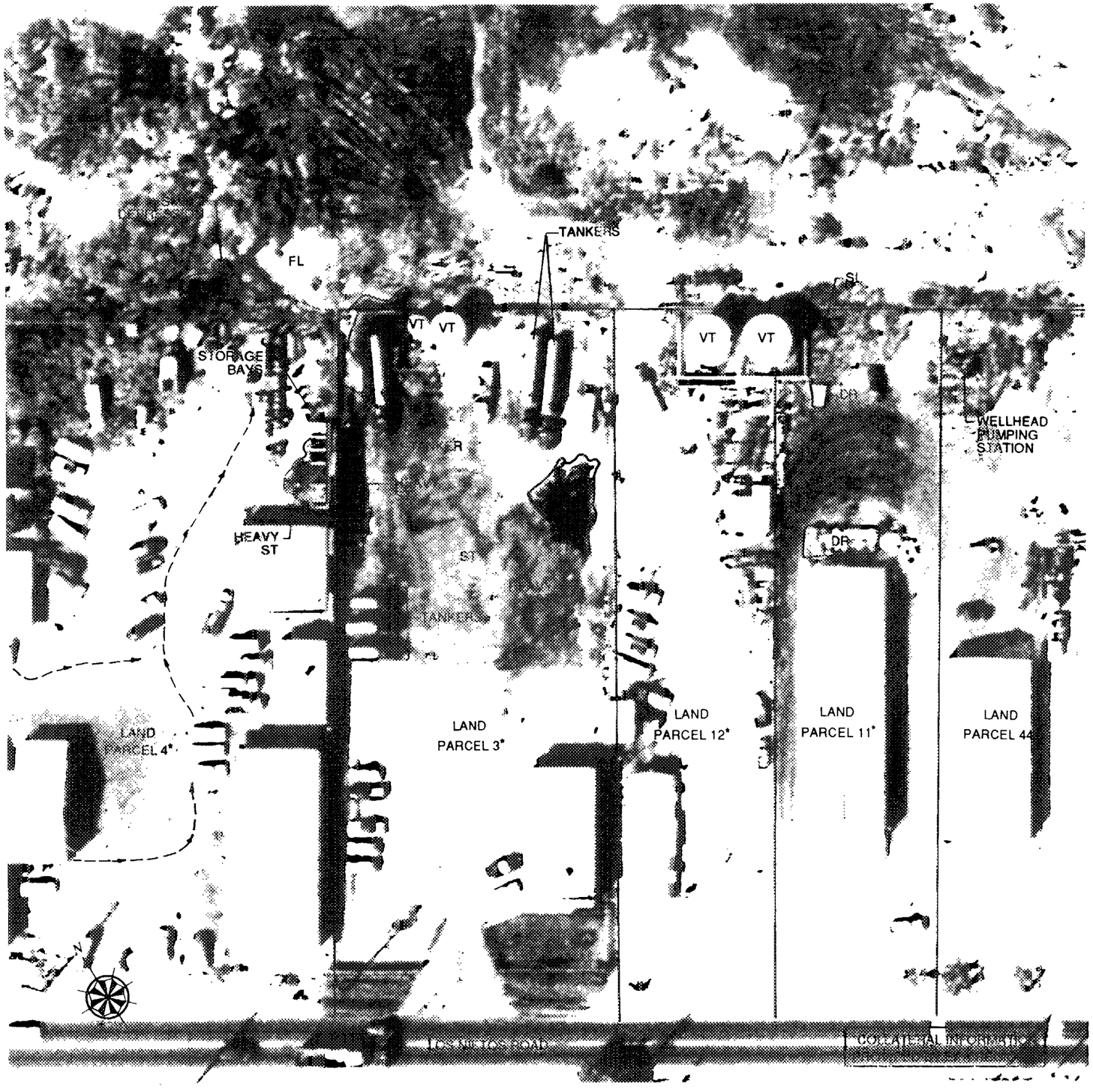
SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 10. Waste Disposal, Inc., Land Parcels 3 and 4, February 25, 1951. Approximate scale 1:800.

AUGUST 9, 1955 (FIGURE 11)

Small drainageways are present on Land Parcel 4*. They appear to originate at two buildings in the central portion of the parcel and flow to the northeast. A probable truck tanker transport company is located in Land Parcel 3. A large stain is seen in the facility lot and heavy stains and standing liquid are located at the northern corner. A small drainageway leads from this corner of Land Parcel 3 to a small depression where standing liquid is observed. Within Land Parcel 12* are two large vertical storage tanks (VT). Three drum storage areas (DR) are present in Land Parcel 11*. Standing liquid is visible outside the storage tank containment wall. To the southeast a wellhead pumping station is seen in Land Parcel 44*.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)

- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK

- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 11. Waste Disposal, Inc., Land Parcels 3-44, August 9, 1955. Approximate scale 1:765.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x— FENCED SITE BOUNDARY
- ——— UNFENCED SITE BOUNDARY
- x x x x x x FENCE
- — — — STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

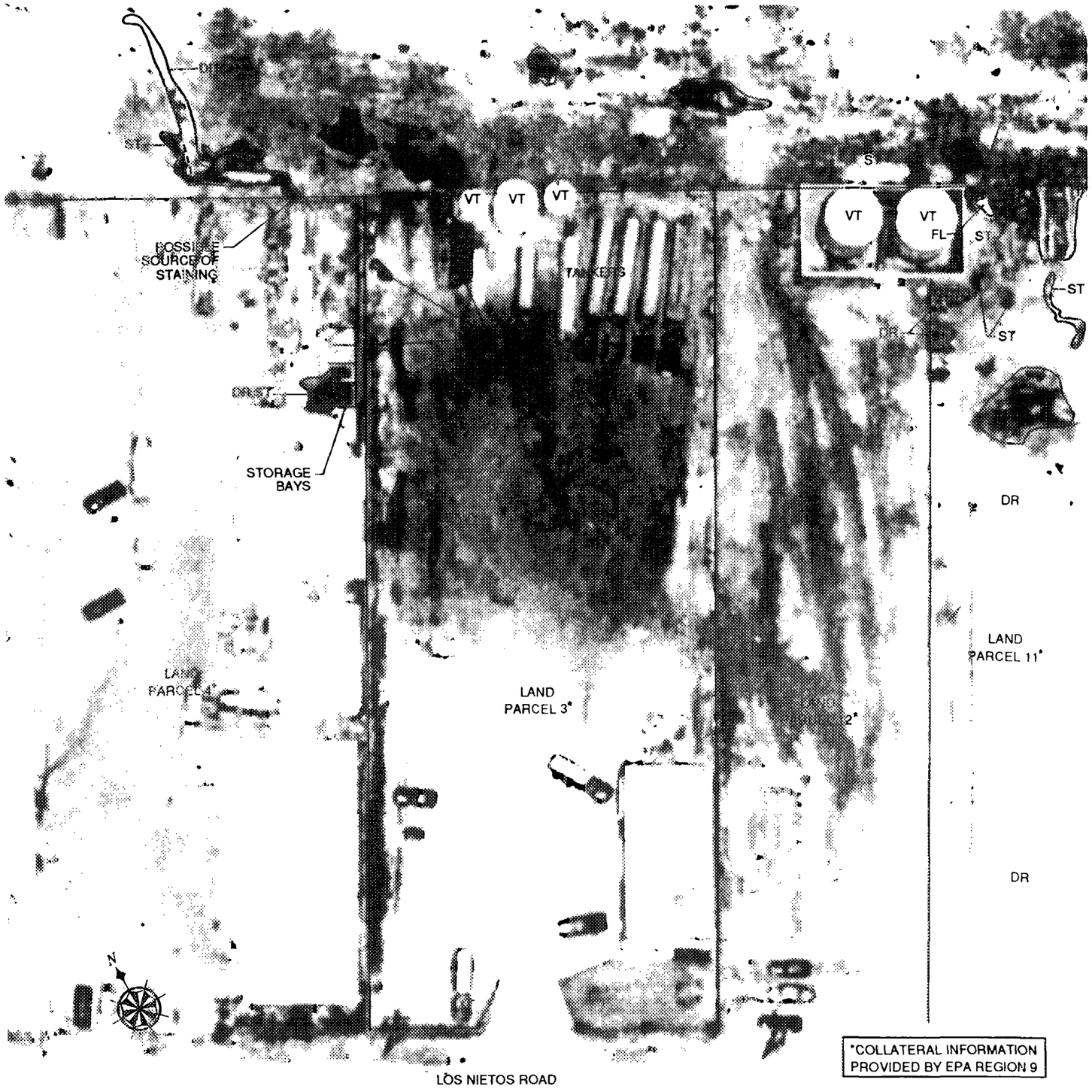
SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 11. Waste Disposal, Inc., Land Parcels 3-44, August 9, 1955. Approximate scale 1:765.

JUNE 17, 1959 (FIGURE 12)

A small ditch with staining is observed northeast of Land Parcel 4. The ditch possibly originates within the parcel itself. Drums and associated staining are also seen in Land Parcel 4. At the northeast end of Land Parcel 3 are five tankers. Staining is noted in several locations within the parcel and also immediately northeast of the parcel. Staining is present in Land Parcel 12. Standing liquid is seen within the storage tank containment and stains are observed adjacent to the containment wall. Within Land Parcel 11 drums are stored in five locations. Staining is associated with two of these storage areas.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 12. Waste Disposal, Inc., Land Parcels 3-12, June 17, 1959. Approximate scale 1:570.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 12. Waste Disposal, Inc., Land Parcels 3-12, June 17, 1959. Approximate scale 1:570.

DECEMBER 2, 1962 (FIGURE 13)

At Land Parcel 4, staining continues to be present near the drum storage area seen in 1959. Standing liquid is present northeast of Land Parcel 4 where the stained ditch was noted in 1959. Staining is noted northeast of the standing liquid. Six tankers are parked at Land Parcel 24*. Staining is visible throughout the northeastern portion of Land Parcel 3.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 13. Waste Disposal, Inc., Land Parcel 3-44, December 2, 1962. Approximate scale 1:750.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)

- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK

- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 13. Waste Disposal, Inc., Land Parcel 3-44, December 2, 1962. Approximate scale 1:750.

FEBRUARY 28, 1963 (FIGURE 14)

A small stain is visible in the facility lot of Land Parcel 4. A small drainageway leads from the stain in a northeasterly direction. Standing liquid is observed in the same approximate location as seen in 1962. Within Land Parcel 24, one tanker and two stained areas are observed. The two stained areas are possibly related to the three vertical storage tanks in Land Parcel 3 (in 1959) when staining was observed. The three tanks appear to have been removed.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

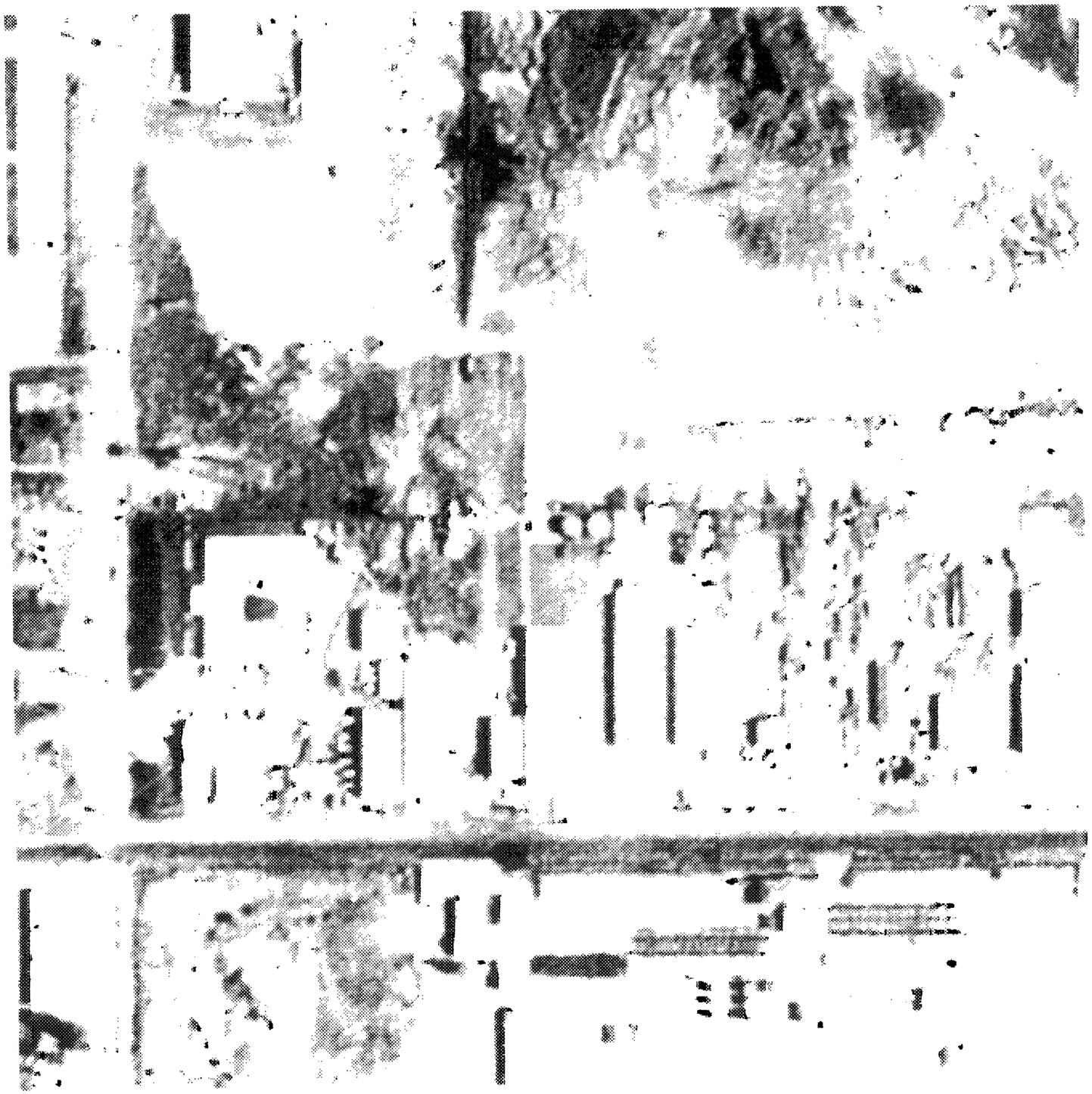
SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)

- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK

- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 14. Waste Disposal, Inc., Land Parcels 3-44. February 28,1963. Approximate scale 1:1,320.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

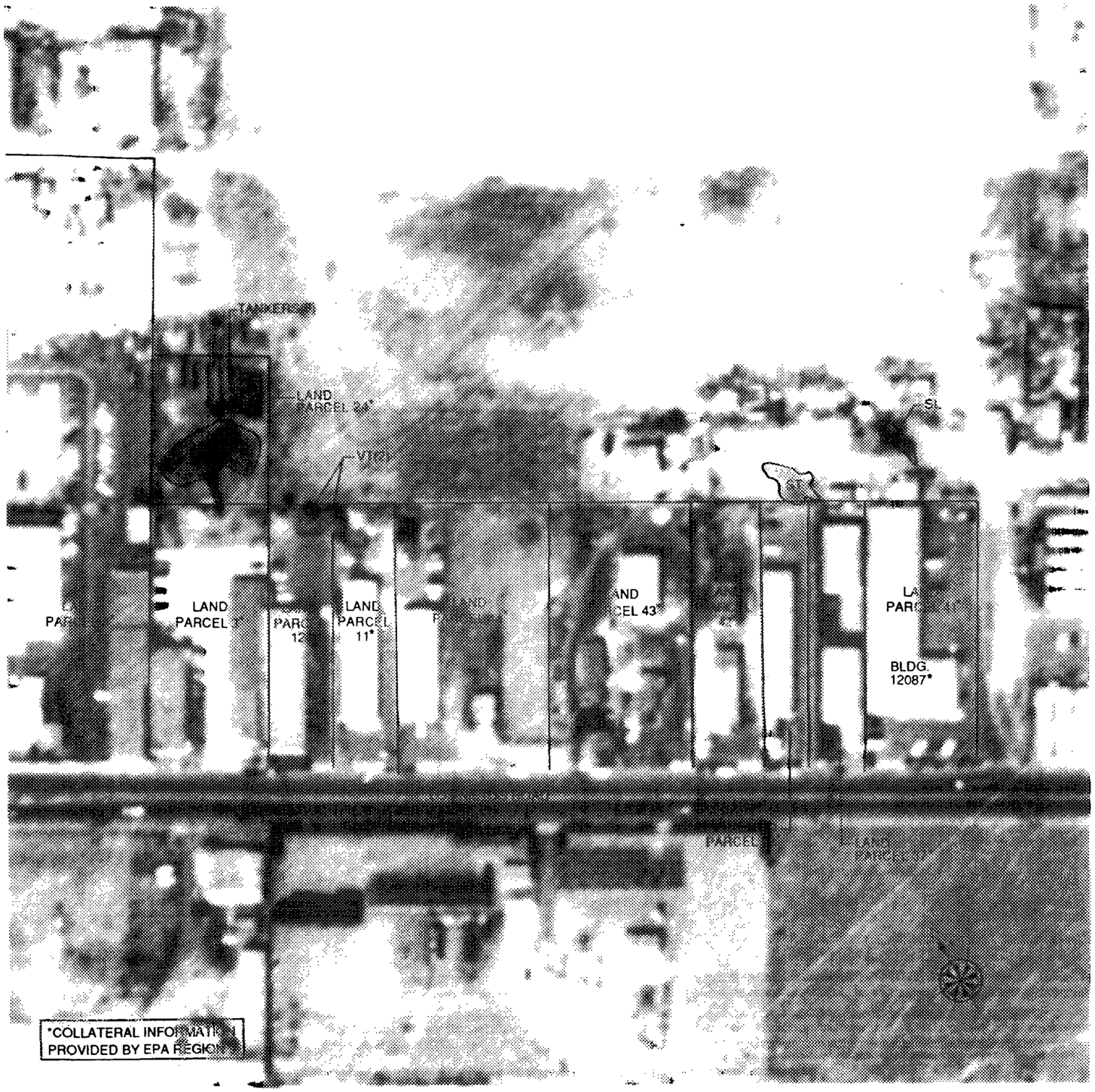
SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 14. Waste Disposal, Inc., Land Parcels 3-44. February 28,1963. Approximate scale 1:1,320.

SEPTEMBER 23, 1968 (FIGURE 15)

No observation of the standing liquid and staining seen adjacent to Land Parcel 4 (in 1959, 1962, and 1963) was possible due to development of the remainder of the parcel. Standing liquid and staining are seen in Land Parcel 24. These two features appear to have originated where the three vertical tanks were seen in 1959. An area of staining is noted adjacent to Land Parcels 32* and 37*. Standing liquid is observed near the northeast end of Building 12087* which is in Land Parcel 41*.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 15. Waste Disposal, Inc., Land Parcels 3-44, September 23, 1968. Approximate scale 1:1,280.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x— FENCED SITE BOUNDARY
- ——— UNFENCED SITE BOUNDARY
- x x x x x x FENCE
- — — — STUDY AREA

DRAINAGE

- ←- - - DRAINAGE
- ← FLOW DIRECTION
- - -←- - - INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- = = = = = VEHICLE ACCESS
- +-+-+-+ RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 15. Waste Disposal, Inc., Land Parcels 3-44, September 23, 1968. Approximate scale 1:1,280.

JUNE 17, 1959 (FIGURE 16)

Land Parcel 7*, located in the northern corner of the site, appears to be a concrete mixing plant. A large stain is present to the southeast of the central processing area and two dump trucks are located adjacent to the stain. Staining also exists in the office parking lot and along one of the plant access roads. A large area of standing liquid and staining is present southwest of the office. A truck is present immediately southeast of this large area. Moist fill is visible near the central processing area and to the southwest. This liquid is probably associated with the concrete mixing process.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 16. Waste Disposal, Inc., Land Parcel 7, June 17, 1959. Approximate scale 1:370.

INTERPRETATION CODE

BOUNDARIES AND LIMITS

- FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- VEHICLE ACCESS
- RAILWAY

SITE FEATURES

- BERM/DIKE
- STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)

- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK

- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WV WETLAND VEGETATION

Figure 16. Waste Disposal, Inc., Land Parcel 7, June 17, 1959. Approximate scale 1:370.

GLOSSARY

Dark-, Medium-, or Light-Toned - Tones of features in question are compared with the darkest and lightest tones of gray (if using B&W photography) on the print.

Drums (DR) - Metal cylinders used for the storage, transportation, or disposal of materials.

Fill (FL) - Earth, stones, or other material that is used to build up the level of an area of ground.

Oblique photographs - Usually taken at an angle of 30 to 60 degrees to demonstrate the relationship of a site with major points of interest.

Stain (ST) - A residue or discoloration resulting from a spill, discharge, or removed/dispersed materials.

Standing Liquid (SL) - A small, shallow, temporary collection of liquid, not *necessarily waste. Not to include liquid contained in impoundments, trenches,* pits, etc.

Tanks - Vertical tanks (VT), horizontal tanks (HT), pressure tanks (PT), tank **farms, and solid waste management units. A large receptacle, container, or structure for holding liquid or gas.**

Vertical photographs - Taken at a 90 degree angle with the camera pointing straight down from the aircraft. The vertical perspective can minimize geometric distortion and permits the use of stereoscopic viewing techniques and relatively straight forward measurements.

REFERENCES

MAPS

Source[a]	Figure	Name	Scale	Date
USGS	1	United States	1:2,500,000	1972
USGS	2	Whittier, CA	1:24,000	1981

COLLATERAL INFORMATION

EPA. 1998. Collateral Information(reports and maps) provided by Region 9. 38 pp.
LESAT (Lockheed Environmental Systems & Technologies Co.). 1998. Master Quality Assurance Project Plan. Prepared for EPA Environmental Sciences Division. Contract 68-C5-0065. Las Vegas, Nevada.

AERIAL PHOTOGRAPHS

Photo source[a]	Figure[b]	Date of acquisition	Original scale	Film type[c]	Mission I.D.	Source frame #
WHIT	d,e	03-04-22	Oblique	B&W	-	-
WHIT	d,e	06-10-23	Oblique	B&W	-	-
WHIT	d,e	02-13-24	Oblique	B&W	-	-
WHIT	d,e	07-28-26	Oblique	B&W	-	-
WHIT	d	00-00-27	1:18,000	B&W	C-113	560,561
WHIT	3	00-00-28	1:18,000	B&W	C-300	378
WHIT	d,e	07-07-33	Oblique	B&W	0-3609	-
WHIT	d	08-16-36	1:18,432	B&W	C-4131	14,28
WHIT	4	02-20-37	1:11,400	B&W	C-4338	12
WHIT	d	01-01-45	1:9,600	B&W	C-9250	56,57
WHIT	d	06-18-47	1:24,000	B&W	C-11351	66,67
WHIT	d	02-16-49	1:24,000	B&W	C-13373	60,61
WHIT	5e	02-01-51	1:12,000	B&W	C-16129	#2S:2
WHIT	6,10	02-25-51	1:12,000	B&W	C-16129	S:5
WHIT	7e	04-22-51	1:12,000	B&W	C-16129	#3 S:13
WHIT	8e	07-27-51	1:12,000	B&W	C-16129	#3 S:2
WHIT	9e	10-06-51	Oblique	B&W	-	O-012350
WHIT	d,e	05-04-52	1:12,000	B&W	C-16129	#3 S:18
WHIT	d	06-13-52	1:30,000	B&W	C-2062	70,71
ASCS	d	10-19-53	1:20,000	B&W	AXJ	148,149,150
WHIT	11	08-09-55	1:4,800	B&W	C-22218	55
WHIT	d	09-01-55	1:12,000	B&W	C-22246	1:5,1:19
WHIT	d	01-17-56	1:12,000	B&W	C-22246	2:1,2:13
WHIT	d	02-03-56	1:12,000	B&W	C-22246	10
WHIT	d	02-09-56	1:12,000	B&W	C-22246	7,8
WHIT	d	01-17-58	1:36,000	B&W	C-23023	13,14
WHIT	d,e	09-08-58	1:12,000	B&W	C-23224	236
WHIT	d	06-15-59	1:4,800	B&W	C-23575	103-105
WHIT	12,16	06-17-59	1:4,800	B&W	C-23575	2:3

(continued)

AERIAL PHOTOGRAPHS (continued)

Photo source[a]	Figure[b]	Date of acquisition	Original scale	Film type[c]	Mission I.D.	Source frame #
WHIT	d,e	03-04-22	Oblique	B&W	-	-
WHIT	d	05-05-59	1:20,000	B&W	C-23578	70
UCSB	d	06-30-60	1:20,000	B&W	23870	2312,2313
WHIT	d	03-13-62	1:24,000	B&W	157V	98,99
WHIT	13	12-02-62	1:14,400	B&W	C-24385	5-1
USGS	14	02-28-63	1:20,000	B&W	VASK	1-42
UCSB	d	10-17-66	1:24,000	B&W	HB-JB	23,24
WHIT	15	09-23-68	1:24,000	B&W	-	218

[a]ASCS U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, Salt Lake City, Utah
UCSB University of California at Santa Barbara, Santa Barbara, California
USGS U.S. Department of Interior, U.S. Geological Survey, Washington, D.C.
WHIT Fairchild Aerial Photography, Whittier College, Whittier, California
[b]Photographs with figure numbers are included in this report to depict examples of waste-related features present at the Waste Disposal, Inc., site.
[c]B&W Black-and-white
[d]These photographs were examined to access trends in waste disposal activity between sets (dates) of other photographs that were used in the analysis of the oil reservoir and land parcels. However, interpretive data were not extracted from them nor are they included in this report.
[e]Stereo photography not available